CLAIMS

1. A fiber trim apparatus adapted to trim an exposed fiber optic cable segment protruding from at least one optical interface being processed within a multi-stage integrated optical component processing system, comprising:

a laser cutting tool adapted to direct at least one laser beam to the optical interface to trim at least some of an excess of fiber optic cladding and core extending from the at least one optical interface; and

a trim positioning apparatus adapted to position the excess fiber optic cladding and core extending from the at least one optical interface between a pre-processing and processing position with respect to the laser cutting tool.

2. The apparatus of claim 1, wherein the laser cutting tool comprises a laser source adapted to provide one or more laser beams configured to cut the excess fiber and fiber optic cladding.

3. The apparatus of claim 2, wherein the laser cutting tool further comprises a beam splitter having a first laser transmission path coupled on a first end to the laser source and on a second end to the laser beam splitter assembly.

4. The apparatus of claim 1, wherein the laser cutting tool comprises a laser beam splitter assembly adapted to direct one or more laser beams onto the excess fiber optic cladding and core extending from the optical interface.

5. The apparatus of claim 4, wherein the laser beam splitter assembly comprises a first laser beam transmission path wherein the first laser transmission path directs at least a portion of a first laser beam generally orthogonal to a longitudinal axis of the fiber optic cable.

6. The apparatus of claim 4, wherein the laser beam splitter assembly further comprises a second laser beam transmission path, wherein the second laser transmission path directs at least a portion of a second laser beam generally parallel to a longitudinal axis of the fiber optic cable.

7. The apparatus of claim 4, wherein the laser beam splitter assembly further comprises a first and a second laser beam transmission paths, the first laser beam transmission path directing at least a portion of a first laser beam generally orthogonal to a longitudinal axis of the excess fiber optic cladding and core extending from the optical interface, and wherein the second laser transmission path directs at least a portion of a second laser beam about parallel to the excess fiber optic cladding and core extending from the optical interface.

8. The apparatus of claim 1, wherein the trim positioning apparatus comprises a trim pincher adapted to hold the optical interface.

9. The apparatus of claim 8, wherein the trim positioning apparatus comprises a horizontal trim motor and a vertical trim motor adapted to position a component interface terminated to the fiber optic cable between the pre-processing position and processing position.

10. An optical fiber trim apparatus adapted to trim an exposed segment of a fiber optic cable protruding from at least one optical interface being processed within a multi-stage integrated optical component processing system, comprising:

a laser cutting tool coupled on an input to at least one laser beam source adapted to burn the excess cladding and core of the exposed segment of a fiber extending from the at least one optical interface; and

a laser beam splitter assembly coupled on an output of the laser cutting tool, wherein the laser beam splitter assembly is configured to direct at least a first laser beam and a second laser beam to the exposed segment of the fiber optic cable protruding from the at least one optical interface to burn at least some of a fiber optic cable cladding and core therefrom.

11. The apparatus of claim 10, wherein the laser beam splitter assembly comprises a first laser beam positioning member adapted to position the first and second laser beams on the fiber optic cladding and core.

12. The apparatus of claim 11, wherein the first laser beam positioning member comprises a first and a second laser beam transmission paths, wherein the first laser beam transmission path directs at least a portion of the first laser beam generally orthogonal to a longitudinal axis of the excess fiber optic cladding and core extending from the optical interface, and wherein the second laser transmission path directs at least a portion of the second laser beam generally parallel to the excess fiber optic cladding and core extending from the optical interface.

13. The apparatus of claim 10, further comprising a trim positioning apparatus moveably disposed on a frame member, the optical interface being held by a trim pincher disposed on the trim positioning apparatus.

14. The apparatus of claim 13, wherein the trim positioning apparatus includes a horizontal trim motor and a vertical trim motor adapted to cooperatively move the trim pincher between a component loading and a processing position.

15. A method for trimming an excess fiber optic cladding and core material extending from an optical interface, comprising:

positioning the excess fiber optic cladding and core material extending from the optical interface within a portion of a laser beam split into two or more laser beams, wherein the two or more laser beams are adapted to trim the excess fiber optic cladding and core extending from the optical interface;

positioning the two or more laser beams at one or more incidence angles with respect to the longitudinal axis of the excess fiber optic cladding and core extending from the optical interface; and

trimming the excess fiber optic cladding and core extending from the optical interface.

16. The method of claim 15, wherein positioning the two or more laser beams comprises directing at least some of the first laser beam about orthogonal on to the excess fiber optic cladding and core extending from the optical interface.

17. The method of claim 15, wherein trimming comprises directing at least some of the second laser beam about parallel on to the excess fiber optic cladding and core extending from the optical interface.

18. The method of claim 15, wherein trimming comprises burning the excess fiber optic cladding and core extending from the optical interface using at least one of the first and second laser beams.

19. The method of claim 15, wherein splitting at least some of laser beam into at least the first laser beam and the second laser beam comprises directing some of the laser beam along a first laser path and some of the laser beam along a second laser path, wherein the first and second laser paths are about orthogonal.

20. The method of claim 19, further comprising prior to trimming directing at least some of the first and second laser beams onto the excess fiber optic cladding and core extending from the optical interface.

21. A fiber trim apparatus adapted to trim at least a portion of an exposed fiber optic cable segment protruding from an optical interface, comprising:

a frame supporting a laser-cutting tool having a laser source and a laser splitter assembly adapted to split one or more laser beams into at least a first and second beams, wherein the laser splitter assembly includes at least a first laser transmission path coupled on one end to the laser source and on another end to the splitter assembly, wherein the splitter assembly further defines a first split transmission path and a second split transmission path for guiding the first and second beams;

a laser light positioning member coupled to the splitter assembly and adapted to position the first and second beams onto the exposed fiber optic cable segment; and

a trim positioning apparatus moveably disposed on the frame and adapted to hold and position the optical interface for processing.

22. The apparatus of claim 21, wherein the laser light positioning member is adapted to align the first split laser beam orthogonal to the exposed fiber optic cable segment.

23. The apparatus of claim 21, wherein the laser light positioning member is adapted to align the second beam axially with respect to the longitudinal axis of the exposed fiber optic cable segment.

24. The apparatus of claim 21, wherein the first beam and the second beam are about simultaneously directed on the exposed fiber optic cable segment.

25. The apparatus of claim 21, wherein the first beam and the second beam are sequentially directed on the exposed fiber optic cable segment.

26. The apparatus of claim 21, wherein the trim positioning apparatus comprises a trim pincher apparatus adapted to hold and position the optical interface between a plurality of processing positions adjacent the laser light positioning member.

27. The apparatus of claim 26, wherein the trim positioning apparatus comprises a horizontal trim motor and a vertical trim motor adapted to move the trim pincher apparatus vertically and horizontally between the plurality of processing positions.